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# A REVIEW ON POSTSURGICAL PAIN ASSESSMENT TOOLS



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## Abstract

Postsurgical pain [PSP] treatment is becoming more important for the management of acute and chronic postsurgical pain. Acute and disease-related pain may be easily assessed. Clinical pain assessment usually suffices. In addition to how bad the pain is when the person is at rest, clinical assessment of therapies for acute pain must describe and evaluate other important aspects of acute pain. Otherwise, nonsensical data and erroneous conclusions may ensue. Acute and disease-related pain may be easily assessed. Clinical pain assessment usually suffices. In addition to how bad the pain is when the person is at rest, clinical trials of therapies for acute pain must describe and evaluate other important aspects of acute pain. Otherwise, nonsensical data and erroneous conclusions may ensue. Post-surgical pain evaluation is essential for pain management and patient outcomes. The Numeric Rating Scale, Visual Analog Scale, Verbal Rating Scale, Facial Pain Scale—Revised, and Short Pain Inventory evaluate pain severity and its effect on patients. Healthcare professionals should utilize a validated pain assessment method for the patient group and recognize limits and biases when evaluating pain ratings to enhance patient outcomes, experts recommended better pain evaluation and treatment techniques. Pharmacological and non-pharmacological therapies tailored to the patient's requirements and preferences are needed for effective pain management.

**Key Points:** Postsurgical pain, Numeric Rating Scale, Visual Analog Scale, Verbal Rating Scale, Facial Pain Scale—Revised

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## INTRODUCTION:

The International Association for the Study of Pain says, "Pain is an unpleasant sensory and emotional experience that is linked to or characterized by tissue damage."<sup>[1]</sup> Postsurgical management of skin, bone, or soft tissue surgeries requires the addition of an analgesic for the treatment of pain. The post-surgical discomfort usually decreases with normal, uncomplicated wound healing. Some patients feel severe discomfort or pain in the dermatomes of the operated organ for months or years. <sup>[2]</sup> Postsurgical pain [PSP] treatment is becoming more important for the management of acute and chronic postsurgical pain. However the development of [CPSP] attributes to multiple factors like physical, physiological, hereditary and social factors. With an incidence of up to 30%, depending on surgery. 5–10% of PSP patients have substantial functional deficits. <sup>[3]</sup> CPSP affects 5-65% of thoracotomy patients, 30-50% of heart surgery patients, 5-63% of hernia surgery patients, 11-57% of mastectomy patients, and 30-85% of amputation patients. <sup>[4]</sup> It would seem that the process of developing chronic postsurgical pain [CPSP] is one that involves several factors. Physical factors, psychological issues, hereditary factors, and societal factors all have an impact on it. <sup>[5,6]</sup>

## MECHANISM OF POST-SURGICAL PAIN:

As a direct result of surgery, inflammatory mediators like prostaglandins and cytokines are released. <sup>[7]</sup> Prostaglandins and cytokines are what turn on the primary afferents of the sensory system and make them more sensitive. The peripheral sensitization and facilitation of synaptic transmission in the CNS and the afferent inputs diminished after the wound healing progress. On the other hand, inflammation could continue to be present in certain situations. For example, fixing a tension-

reduced hernia with a prosthetic mesh causes a large inflammatory reaction around the artificial material that lasts longer than the time needed for the superficial incision to heal. <sup>[8]</sup>

## PAIN ASSESSMENT:

Acute and disease-related pain may be easily assessed. Clinical pain assessment usually suffices. In addition to how bad the pain is when the person is at rest, clinical assessment of therapies for acute pain must describe and evaluate other important aspects of acute pain. Otherwise, nonsensical data and erroneous conclusions may ensue. Long-term pain and treatment effects are harder to assess in cancer and non-cancer individuals. Clinical studies of pain therapies need accurate pain measurements. A pain measure's sensitivity, or capacity to identify changes in pain over time and with therapy, may be its most crucial feature. <sup>[9][10]</sup>

## SIMPLE PAIN ASSESSMENT:

In the postoperative setting, a quick pain scale is as follows:

- Comfortable [awake or sleeping] [awake or asleep],

It hurts just a little, and only when you really probe.

- Pain in the moderate range is annoying but usually manageable by just resting motionless. At the patient's request, analgesia may be administered,
- In severe pain Intolerable suffering, demanding immediate attention and treatment. <sup>[11]</sup>

## TYPES OF TOOLS IN PAIN ASSESSMENT:

Healthcare providers may ask patients about their pain using a variety of

postoperative pain evaluation methods. The following are examples of widely used equipment:

- **Numeric Rating Scale [NRS]:** The NRS is a typical instrument that asks patients to score their discomfort from 0 to 10. The American Pain Society and European Pain Federation support it after many research.
- **Visual Analog Scale [VAS]:** Patients indicate their discomfort on a 10-cm line on the VAS. The American Pain Society and European Pain Federation endorse it after many research verified it. <sup>[12][13]</sup>
- **Verbal Rating Scale [VRS]:** Patients assess their pain from minor to severe. Many research from the American Association for Pain Management Nursing promote it. <sup>[14][15]</sup>
- **Faces Pain Scale-Revised [FPS-R]:** Patients rate their pain using a sequence of faces with varying emotions. The American Pain Society and European Pain Federation support it after many research. <sup>[12][13]</sup>
- **Brief Pain Inventory [BPI]:** Measures pain severity and interference with everyday activities. The National Comprehensive Cancer Network recommends it after multiple research. <sup>[16][17]</sup>
- **Critical-Care Pain Observation Tool [CPOT]:** Another critical-care patient pain assessment instrument. Facial emotions, bodily movements, muscular tension, and mechanical ventilation compliance determine discomfort. <sup>[18]</sup>

### NUMERIC RATING SCALE:

Clinical and research pain assessment uses the Numeric Rating Scale [NRS]. Patients rate their pain from 0 to 10, with 0 being no pain and 10 being the greatest agony. The NRS is a simple and effective pain assessment instrument, although its

reference points are not standardized. It is commonly used in hospitals, clinics, and primary care offices and may utilize the scale, which is straightforward to use. Many studies have shown that the NRS is an effective way to measure pain. The Journal of Pain concluded that the NRS was a trustworthy measure for measuring chronic pain severity.

NRS pain evaluation also has drawbacks. Reference point standardization is a major issue. Patients may perceive each scale number differently, resulting in inconsistent and erroneous pain evaluations. A patient may score their pain as a 5 on the NRS, yet that 5 may imply something else to them. <sup>[16][19]</sup>

### VISUAL ANALOG SCALE:

Pain, anxiety, and mood are often measured using the Visual Analog Scale [VAS]. It is a 10-cm-long horizontal or vertical line with ends designated as the extreme opposites of the event being assessed. The responder marks the line to indicate their current experience level, with the distance from the beginning point to the mark signifying its magnitude. The VAS outperforms the NRS and Likert scale in subjective measurement. Its high sensitivity and resolution enable more accurate subjective experience measures. The VAS has strong test-retest reliability and can measure changes in subjective experience over time.

Many studies have verified the VAS for pain severity. The Journal of Pain and Symptom Management reported that the VAS was a viable and reliable measure for measuring chronic pain severity. The VAS was more responsive to fluctuations in pain intensity and had a smaller measurement error than the NRS. The VAS is user-friendly and patient-acceptable. In clinical and research contexts, the VAS may be given rapidly and easily by patients.

The drawbacks of VAS include the anchoring effect of the scale endpoints or the respondent's expectations and experiences which may cause response bias. Quality of life and emotional well-being may be harder to assess using the VAS. Finally, the Visual Analog Scale is extensively used and verified for evaluating subjective feelings, including pain, anxiety, and mood. It outperforms other subjective measuring techniques in sensitivity, resolution, reliability, and usability. It may be biased and unsuitable for some subjective experiences. [20][21][22]

### VERBAL RATING SCALE:

The Verbal Rating Scale measures subjective feelings including pain, anxiety, and mood. The responder rates their experience using adjectives like "no discomfort," "mild pain," "moderate pain," and "severe pain." The VRS outperforms the Numeric Rating Scale [NRS] and the Visual Analog Scale [VAS] in subjective measurement [VAS]. Its simplicity and usability are major benefits. Clinical and research environments may use the VRS fast and easily. Numerous studies have validated the VRS for pain severity. The Journal of Pain and Symptom Management reported that the VRS was a viable and reliable measure for measuring chronic pain severity. The VRS, NRS, and VAS all measured pain severity equally well, according to the research. The VRS can also record subjective sensations. The VRS allows respondents to describe their experience using descriptive words and phrases. This is crucial for evaluating intangibles like emotional suffering. Response bias due to expectations and past experiences is a constraint. The VRS may not be able to detect modest intensity variations over time due to the descriptive words and phrases. It's simple, easy to use, and captures experiential subtleties better than other subjective measuring techniques. Drawbacks include reaction

bias and poorer intensity sensitivity. [21][23][24]

### FACES PAIN SCALE-REVISED:

It has a variety of faces, from a happy face signifying "no pain" to a sobbing face indicating the worst possible suffering. With children and adults who have trouble expressing their pain, the Faces Pain Scale-Revised [FPS-R] is used to measure pain severity. Based on two recent investigations, FPS-R's usage and validity in clinical and research can be justified.

In a study by Tsze Ds et al., children aged 4–12 experiencing acute pain were tested for FPS-R validity and reliability. The FPS-R measured pain intensity in this group. The researchers found that the FPS-R was useful for measuring pain in youngsters who couldn't speak.

A recent study in Pain Medicine research by Tait RC et al., compared the FPS-R to the Numeric Rating Scale [NRS] and Visual Analog Scale [VAS] in a sample of adult chronic pain sufferers. The FPS-R was valid and trustworthy for evaluating pain intensity in this cohort. The FPS-use R's of facial expressions may assist individuals with low reading or language abilities communicate, according to the researchers. [25][26]

### BRIEF PAIN INVENTORY:

Clinical and research contexts employ the Brief Pain Inventory [BPI] to measure pain intensity and interference. Two subscales—pain severity and pain interference—comprise it. Patients assess their pain intensity on the pain severity subscale and their life disturbances on the pain interference subscale. The Journal of Pain Research by Serlin RC et al., examined the BPI's validity and reliability in chronically ill adults. The BPI was accurate and valid for measuring pain intensity and interference in the cohort and helps to analyze how pain affected

patients' mood, sleep, and everyday activities.

In research by Cleeland CS et al., advanced cancer patients were compared to the BPI, NRS, and VAS. The BPI was valid and accurate for evaluating pain intensity and interference in this sample. In complicated pain treatment settings, the BPI can measure pain and its influence on patients' lives, according to the researchers. [19][16]

### **CRITICAL-CARE PAIN OBSERVATION TEST:**

The Critical-Care Pain Observation Test [CPOT] is often used to measure pain in critically sick patients who cannot speak. The four subscales of CPOT include facial expression, body movements, muscle tension, and mechanical ventilation compliance, which are scored in a range from 0 to 8. CPOT has been tested in several populations for its validity and reliability. Multi-subscale pain evaluation and the capacity to overcome communication difficulties make it valuable in ICUs. The requirement of properly trained "HCPs" to apply CPOT is a major drawback [27]

### **CONCLUSION:**

In conclusion, post-surgical pain evaluation is essential for pain management and patient outcomes. The Numeric Rating Scale, Visual Analog Scale, Verbal Rating Scale, Facial Pain Scale—Revised, and Short Pain Inventory evaluate pain severity and its effect on patients. Healthcare professionals should utilize a validated pain assessment method for the patient group and recognize limits and biases when evaluating pain ratings. Huang YS et al., emphasized that poor post-surgery pain management increased problems and hospital stays. To enhance patient outcomes, experts recommended better pain evaluation and treatment techniques. Pharmacological and non-

pharmacological therapies tailored to the patient's requirements and preferences are needed for effective pain management.

[28]

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### **CONFLICT OF INTEREST**

There is no conflict of interest between the authors.

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